

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 April 2001 (05.04.2001)

PCT

(10) International Publication Number
WO 01/24074 A1

(51) International Patent Classification⁷: G06F 17/60

(21) International Application Number: PCT/FI00/00838

(22) International Filing Date:
29 September 2000 (29.09.2000)

(25) Filing Language: Finnish

(26) Publication Language: English

(30) Priority Data:
19992110 30 September 1999 (30.09.1999) FI
20000955 20 April 2000 (20.04.2000) FI
20001658 13 July 2000 (13.07.2000) FI
20001659 13 July 2000 (13.07.2000) FI

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— With international search report.

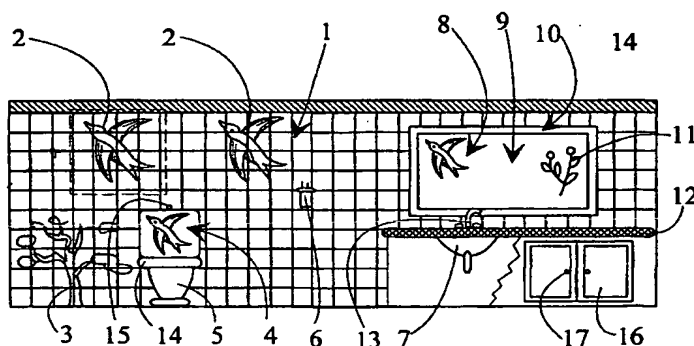
(71) Applicants and

(72) Inventors: RUUTTU, Jari [FI/FI]; Ruukintie 4, FIN-10330 Billnäs (FI). TÖRNROOS, Filip [FI/FI]; Sirkkalankatu 24 C 15-17, FIN-20700 Turku (FI).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(74) Agent: BERGGREN OY AB; P.O. Box 16, FIN-00101 Helsinki (FI).

(54) Title: METHOD FOR ACQUIRING CERAMIC, GLASS AND STONE PRODUCTS OR NAME PLATES AND SIGNS THROUGH THE INTERNET



(57) Abstract: The invention relates to a method for acquiring ceramic, glass and stone products via the Internet, which products include, among others: a) ceramic floor tiles and surfacings; b) ceramic wall tiles and surfacings; c) ceramic mouldings and decorative surfacings; d) other ceramic interior parts and surfacings, such as ceramic sanitary products, their parts and utility articles; e) glass wall and ceiling surfacings and doors; f) glass mirrors and mirror surfacings; g) windows; h) glass tables and table surfacings; i) glass utility articles; j) stone tabletops; k) stone tables and table surfacings; l) stone floors and wall surfacings; m) stone interior and decorative articles; n) tombstones and stone memorials; o) an empty or pre-filled bottle, drinking glass, ashtray or other similar utility or decorative article; p) nameplates and signs. A customer in need of the above-mentioned parts himself logs on to the Internet program of a company manufacturing ceramic, glass or stone products and designs the surface patterns, colours, sizes, etc., of the products and feeds the dimensions and quantities of the products into the program by computer, whereafter the customer transmits the data concerning the products he has designed to the data file, i.e. order service, of the company manufacturing the products, the program of the company manufacturing the products selects the suitable manufacturing processes and work processes by means of which the dimensions, outer appearances and surface patterns of the products can be produced, and the company stores or dispatches to the customer the completed products designed by the customer.

WO 01/24074 A1

Method for acquiring ceramic, glass and stone products or name plates and signs through the Internet

5 The present invention relates to a method for acquiring ceramic, glass or stone products through the Internet, such products including:

- a) ceramic floor tiles and surfacings,
- b) ceramic wall tiles and surfacings,
- c) ceramic mouldings and decorative surfacings,
- 10 d) other ceramic interior parts and surfacings, such as ceramic sanitary products, their parts and utility articles,
- e) glass wall and ceiling surfacings and doors,
- f) glass mirrors and mirror surfacings,
- g) windows,
- h) glass tables and table surfacings,
- 15 i) glass utility articles,
- j) stone tabletops,
- k) stone tables and table surfacings,
- l) stone floors and wall surfacings,
- m) stone interior and decorative articles,
- 20 n) tombstones and stone memorials,
- o) an empty or pre-filled bottle, drinking glass, ashtray or other similar utility or decorative article,
- p) nameplates and signs.

25 In the methods known *per se* for ordering various products *via* the Internet, the desired products must be selected from a predetermined assortment. For example, the ordering software pertaining to buildings and interiors comprises only known ready-made options. Corresponding products pertaining to construction and home interiors can also be found in various product catalogues.

30 The object of the present invention is to provide a novel method by which a customer may dimension and design, for example, surfacings for a bathroom and for sanitary areas and products belonging to such areas. The method according to the invention is characterized in that the customer himself logs on to the Internet program of a company manufacturing ceramic, glass or stone products and designs the surface patterns, colours, sizes, etc., of the products and feeds the dimensions

and quantities of the products into the program by computer, whereafter the customer transmits the data concerning the products he has designed to the data file, i.e. order service, of the company manufacturing the products, the program of the company manufacturing the products selects the suitable manufacturing methods
5 and work processes by means of which the dimensions, outer appearances and surface patterns of the products can be produced, and the company stores or dispatches to the customer the completed products designed by the customer.

The method is based on the simple solution that the program devised for digital control of predetermined work processes is at the same time a program by means of
10 which parts required for interiors are designed, the designing thus being done by the customer.

This means that all of the work processes can be created digitally, i.e. a digital signal, in a controlled form, can be converted into the desired end product.

For example, by using a processor and a program, a surface pattern can be
15 converted into direct current or a pulse, or pneumatics can be controlled so that a surface pattern and dimensions created by the customer can be produced, for example, by laser cutting or, for example, by glazing, when the product is positioned appropriately at a so-called work station, i.e. the 0-point of the product tallies with the 0-point of the digital data file in an xyz coordinate system.

20 The method is thus completely novel: the customer/user is *via* the Internet, by mediation of his own PC, in contact with the data file, i.e. website, of the manufacturing company.

From the website the customer gains access to the program free of charge, which enables him to design parts belonging to an interior in digital form on his own
25 computer.

When the customer has, by using the program, completed a work he approves, i.e. the parts are as he desired, he transmits the pictures back to the data file of the manufacturing company, and production can begin immediately.

The program devised for the method is compatible in terms of both production and
30 design, and both the customer's design work and product control are carried out using one and the same program, wherein information is transmitted in digital form *via* the Internet between the customer and the manufacturer.

The program has been devised so that it can be used for designing only what can be manufactured, i.e. what is to be manufactured, from what material, and how the manufacture is to be carried out, i.e. the work process, have all been decided in advance. Thus the program allows the design of only products that can be
5 manufactured in the production process.

Since all operations, i.e. the design, the transmission from the Internet, i.e. the program and the completed design work, and the production, i.e. production control, are performed in digital form, the completed product is always 100 percent what the customer ordered.

10 Different embodiments of the invention are presented in the non-independent claims of the set of claims.

Since the product segment is wider and the geometry of the partial products can be affected, it is advisable to make the program package going to the customer such that it can be broken up into so-called sub-programs, modems, in which case one
15 program segment will always comprise one product or one further processing method or suchlike. Of course, the customer may take the whole package, but it may be easier always to take the necessary segment. Otherwise the program itself may become too cumbersome. Besides, it is not possible to know in advance whether the customer intends to design only, for example, one stone floor or, for example, an
20 entire larger project, such as all the bathroom and sanitary areas of a hotel.

The customer may take the whole program or a part thereof, whichever he deems best, or he may directly use the Internet connection, the so-called active direct line. In large complicated projects for which the customer's own PC capacity is not sufficient, for example, hotels, etc., it is also conceivable that a registered customer
25 does only part of the work himself, issues instructions to the manufacturing company or to a third party, and receives in return a completed work, although all are under the heading "customer."

The program in the method sets limits on the customer and allows freedoms. The customer cannot, without special permission, affect the so-called state of the art of
30 the product, which means the technical constructions, the technical structure, or the like.

There is thus incorporated into the program a so-called "construction checking program (ccp)", which makes sure that the work carried out fulfils the requirements relating to the strength of materials. The program also inquires the targeted use and

the country, unless this is clear from the contract. In any case, the program has been devised so that the ccp always ensures that a faulty product cannot be ordered without special permission. The ccp also indicates this to the customer and gives a proposal for correction.

- 5 The program is also devised to indicate the material, resistance to chemicals, and other essential facts which it is advisable for the customer to know and which he has the right to know.

The program can also be devised so that the creation of only certain material thicknesses and constructions above certain specific minimum requirements is
10 allowed.

There is also incorporated into the program a ccp + state line, which means directives by the public authorities and stipulations in the legislation governing construction, for example, according to the country or, for example, the EU, within the program.

- 15 Within the ccp the program takes into consideration

1. factors of strength of materials
2. factors of structural engineering
3. directives issued by public authorities, such as safety standards
4. stipulations in legislation governing construction (building standards)
- 20 5. stipulations concerning sub-areas, for example ships → Norske Veritas, i.e. the directives (recommendations) of rating institutions.

A product harmful to the customer or the environment or constituting a health hazard can easily be ruled out, i.e. the customer will not even be able to create one.

The other limitations of the program are always associated with the state of the art
25 and technical construction of the product, which the customer thus cannot affect without the permission of the manufacturing company, and will not violate the above-mentioned items 1-5, if the question is of a commercial public project.

In order to use the program, the customer agrees to comply with the stipulations of the manufacturing company regarding what is stated above.

- 30 The program thus takes into account technical and legal aspects, which, of course, sets limits, and there are also production technology reasons also setting limits, but as a whole the customer has complete freedom with respect to surfaces.

There may also be incorporated into the program segments of the so-called "architectural view" program, including the existing product segment of the target area.

5 The so-called passive part can be expanded endlessly, depending on the market situation, general interest, etc.

The main design program has, of course, been devised so as to be easy to use, i.e. the customer need not take a stand regarding the actual production technology and process, and also not the technical solutions. The main program and the subprograms give the user free hands for planning without needing to understand
10 the different technologies.

As has been stated in daily newspapers, *via* the Internet the customer has access to a program by means of which it is possible to decorate buildings both on the exterior and in the interior, but the products are in a completed form. The customer is not
15 able to design the product himself; he has to select from the completed surfaces and products offered. The present application deviates from the other known programs.

The invention is described below with the help of an example, with reference to the accompanying drawings, in which

- | | |
|-----------------------|--|
| Figure 1 | depicts a wall and products for a sanitary area, |
| Figure 2 | depicts a partial enlarged representation of the wall, |
| 20 Figures 3, 4 and 5 | depict a ceramic floor, |
| Figures 6-10 | depict glass mirrors and their manufacturing processes, |
| Figures 11 and 12 | depict utility articles, |
| Figure 13 | depicts a stone tabletop, |
| Figure 14 | depicts a "gothic" window, |
| 25 Figures 15 and 16 | depict the making of a bottle, |
| Figure 17 | depicts a nameplate provided with patterns, |
| Figures 18-25 | depict various methods for making nameplates and guide plates, |
| Figure 26 | depicts a nameplate according to another embodiment, |
| 30 Figure 27 | depicts part of the plate, and |
| Figure 28 | depicts a nameplate according to a third embodiment. |

The production technology includes the following methods:

A. Coating methods

1. Silver coating (chemical silver coating process)
2. Vacuum vaporization (a process taking place in a vacuum)
- 5 3. Metal coating (a chemical metal coating process)
4. Ceramic coating

B. Work processes

1. Laser machining/engraving – laser pyrography/markings
2. Hologram production methods
- 10 3. Laser printing technology
4. Colour/inkjet technology
5. Silkscreen printing technology
6. Piezoelectric technology
7. Electric technology
- 15 8. Offset and other printing technology
9. Compressed-air blasting technology
10. Mechanical milling/engraving/grinding/polishing
11. Laser or water jet cutting technologies
12. 2-axle or 3-axle worktop with a mechanical process, for example, using an
20 impact tool.

Since, regardless of the product, the production technologies are uniform per group, for example, ceramic products, the figures are presented with explanations and numerals.

25 Thus the first group is ceramic products, Figures 1-5 and Figures 11 and 12, the group comprises areas 1-7, and the more specific example case is ceramic wall tiles and surfacings.

Next, the invention is compared with the figures.

Figures 1 and 2 depict ceramic wall tiles and surfacings.

The figures depict a bathroom wall with the typical fixtures installed on it.

30 The wall is made up of ceramic tiles. The customer has defined their sizes, shapes, locations and 3D surfaces. The customer has placed the desired products at the desired locations; he has thus first selected the products, placed them and designed

the surfaces, i.e. the entity shown in Figure 1 is thus formed. He can freely change the products, change their locations and redesign them during the process. The customer may, for example, design only one separate small part 6, a glass and a glass holder, or a complete bathroom with its walls, floor and lighting. He may
5 order a specimen of a part, for example, in order to be sure of the colour or the pattern, or he may build, for example, the depicted bathroom gradually in the course of years.

This procedure is possible, since the data file created by the customer and recorded in the program contains all the data, such as the time, the colour coordinates, the
10 size of the tiles, the other articles, patterns, etc., in digital form. This means that the work can be sequenced in terms of both time and scope.

The main program can be divided into sub-programs, or even "direct contact" is possible, depending on what the customer desires and is capable of doing, or depending on, for example, the product sectors.

15 The bathroom of Figure 1 can be taken as an example. In the easiest program or sub-program the customer cannot affect the 3D geometry of the various products, for example 9 the mirror, but in other respects he can freely select from ready-made patterns the one he desires, and design. The rest of the program also provides full freedom to change and create freely 3D geometries in addition to the design and
20 planning being completely free, subject to the given limitations and freedoms.

In Figure 1 the customer has created the desired entity with all the separate products.

The wall tiles are shown at 1, and 2 shows how birds, for example, swallows, have been created and placed in natural size at the desired point. In this case the customer
25 himself has, for example, scanned the object from a bird book or has taken the bird picture directly *via* the Internet from some website and has himself recorded the picture in the memory of the design program, from which he has then taken it into use and placed at the desired location. The depicted picture has also been used in other products: on the front 4 of the toilet and in part 8 of the mirror 9. The
30 production technology is different here, since the mirror is not treated with glazing, i.e. it is not fired, and thus the manufacturing processes are any of B. 1-9, but fired colours, i.e. glazings are not used. On the other hand, for ceramic surfaces 1, 2, 4 the same manufacturing processes B. 1-9 are used, but glazings, i.e. silicate-based fired glazings, are used.

The basic production technologies are thus the same, but because of the different further refining processes required by the coatings the production process is different subsequent to the work processes B. 1-9.

5 The customer has, for example, with his own digital camera taken a picture of a tree and transferred it himself to the design program.

The colouring of the toilet can be selected or modified completely freely.

The customer has also positioned a tooth glass with a holder. He has, of course, himself designed and shaped the glass (see Figure 11).

10 There is also positioned a tabletop, for example, of stone 12 (see Figure 13), which has the selected ceramic washbasin 7 and, for example, cut-outs have been made in the stone tabletop 12 on the basis of it. The stone tabletop 12 is dimensioned and positioned in place.

The water tap 13 is positioned in the tabletop 12 in such a manner that it fits together with the ceramic bowl.

15 The stone material of the tabletop 12 can be freely selected from among the stone materials presented in the program, or the customer can order, for example, a special stone material by means of the program.

20 This means that the manufacturing company, of course, cannot stock all the world's stone varieties, but arrangements have been made that the non-stocked stone varieties are listed in the program of the manufacturing company, and when the customer selects a special non-stocked stone variety, he will immediately see its delivery date.

The toilet and the washbasin can be designed by the customer, as can the other ceramic parts.

25 The toilet seat cover, which is usually plastic, and the button for flushing the toilet can also be freely designed.

30 The customer has placed in the wall a mirror 9 of the desired size, designed the bevelling, positioned a bird 8 at the desired point, likewise, for example, a floral arrangement 11. He has also selected a ceramic ceiling moulding 14, doors 16, and their handles 17 from the software and modified them or redesigned them completely from beginning to end.

The customer has thus formed a whole, and upon ordering he also receives a numbered installation and dimensioning chart, in which case the products may also be numbered, but the actual dimensions are shown in millimetres in the customer's own program, and thus the installation is precise and easy.

- 5 At 1 in Figure 1 and at 1 in Figure 2 there is shown the selected tile size and for what the desired graphics have been created and where there is placed the bird pattern 2, for example, a swallow, which has been, for example, scanned from a bird book, sought from the Internet, or created by the customer himself. The figure also shows insects 3 and 4 placed in it. The ceramic tile may be numbered.
- 10 Figures 3, 4 and 5a show a ceramic floor, the dimensions of the room, how tiles have been placed in part of it, and where the desired pattern 4 has been created, and an enlargement of the pattern 4 is shown in Figure 5a.

The question is of precisely the same process as in the ceramic wall, Figures 1-2, but here we discuss how the dimensioning and the tile placement process work.

- 15 The customer dimensions the room, for example, by giving the dimensions of all the sides "side 1 to side 8," for example, in millimetres or in centimetres (Figure 3). At the same time he indicates all the angles in degrees from 0 to 360° and the r (radius) of the arc of "side 6."

- 20 In Figure 3 the room has been dimensioned and the program indicates, for example, the floor area 92.6 m².

The customer selects the dimensions of the tiles, defines the widths of the joints, designs the surface, i.e. the floor, and the program positions the tiles designed for the room of Figure 3. Figure 5 is an enlargement of one detail of Figure 4.

The room is completed, and the customer can confirm the order.

- 25 Ceramic tiles, surfacings and products are commonly manufactured by first press moulding the basic part, the "base," which, for example with respect to tiles is 5-14 mm thick, depending on the intended use, from a clay/ceramic material into the desired shape.

- 30 Thereafter the "base," the press-moulded product, is slowly dried until tack free, whereafter the "base" is fired in a kiln at a high temperature until hard.

After the above-mentioned steps the "base" can be glazed and fired, whereby the desired glazed ceramic product is produced.

The other further refining methods and processes have already been presented, but what is stated below concerns the 3D-formatting, i.e. personification, of a product.

- 5 In order to obtain the desired final result, the process can be carried out in two ways: directly on the workpiece or indirectly *via* the making of a press mould by means of which the actual press moulding of the ceramic material is carried out.

The desired personified 3D-processing can advantageously be carried out as shown in Figure 5b:

- 10 A. Mechanical cutting
B. Mechanical engraving (using a non-rotating cutter head.
Mechanical printing with "heads" = objects of different shapes.
C. Engraving laser

- 15 It is preferable to carry out the said steps after drying or after the firing of the "base."

- In terms of software technology, 3D-formatting by using already existing programs is easy, for example, from pictures, and in the future it will be even easier, when by means of programs created for the purpose it is possible directly to produce a data file which converts the 3D-formatting image created by the customer at the same
20 time into a data file which controls certain of the said PC-controlled work processes A-C.

Figures 6-10 depict a glass mirror and its forming.

- In Figures 6 and 7 the customer dimensions the mirror he desires, i.e. gives the forms, selects the glass thickness, designs or selects the edges, i.e. bevels 2 (also
25 shown in Figure 9 with reference numerals 1, 2, 3). The customer may also select the mirror colour, which may be the glass itself or a colour produced in the glass by a work process (production technology 1, 2 or 3). The colour scale is in practice unlimited.

Thereafter the customer designs the desired pattern 3, which may be a 3D floral arrangement, i.e. the mirror glass surface is subjected to a physical process by any of the work processes B. 1 or 10.

For example, the bird may be produced by any other process described, for example by means of a transfer film on which the said pattern has been printed by method 3 or 4.

The customer has thus completed the designing of his mirror.

Figure 8 shows how the various steps are applied relative to the glass itself, which will then form the mirror designed by the customer.

10 In the figure, reference numeral 1 indicates the glass material, the thickness of which has been selected by the customer and which he has designed and for which he has selected the desired edge, i.e. bevel 2. Reference numeral 3 indicates a score produced by a mechanical process, for example by one of the work processes B. 10, whereby a 3D pattern has been produced. Reference numeral 4 indicates laser
15 engraving, which does not go deep into the material but is generally used in connection 7 with printing or independently, whereby, for example, a satin-surfaced pattern is obtained. Reference numeral 5 indicates printing on the back side of the glass, but always inside the mirror surface 6 itself, because otherwise it would not show through the reflector.

20 All of the said processes can be carried out on either side or on both sides, but the mirror surface itself is always on the back side 6.

It is also known that a genuine or non-genuine hologram can be formed on a mirror glass.

Figure 9 shows examples of edges, i.e. bevels.

25 Figure 10 shows how the customer can construct a so-called layered mirror construction having a lower mirror 1 to which an upper mirror 2 has been fastened, for example, by means of a bolt 3, in which case there is a gap 4 left between the mirrors 1 and 2.

Figures 11 and 12 depict typical so-called utility articles, such as a mug, a glass or a
30 plate, of a ceramic material or glass.

Figure 13 shows the stone tabletop 12 from Figure 1, for which the customer himself selects the stone material, for example, grey gneiss, places in the hole 2 formed in the stone material a ceramic basin which he has designed himself, and selects a water tap, for which an appropriate hole 3 has been made in the stone material. The customer designs and dimensions, gives the radii for the angles and other shapes 6, 7 for the stone thickness he has selected. The work processes so far are B. 10 or 11.

The forming of a pattern in a stone material can be carried out in many ways; three options are presented as examples, but it is to be understood that there may be more work processes.

Option 1

In Figure 13, reference numerals 4, 5 depict stone materials of a variety different from that of the stone tabletop 1. In this case, precisely the area of which the pattern is made up has been removed from the table top by process B. 10 or 11. Likewise, separate stone parts can advantageously be made by the same processes.

Now the tabletop has a throughgoing hole having such a shape that the separate stone parts can be fitted into it precisely.

Option 2

The pattern 4, 5 to be formed in the tabletop can also be made by a chipping process B. 12 or by a laser machining/engraving – laser pyrography/marketing process B.1. The stone material of the tabletop is not changed, but the pattern is made by any of the above-mentioned work processes.

Option 3

Mechanical milling/engraving/grinding/polishing process B.10 is used, in which case predetermined areas can be covered with, for example, gold leaf, as used to be done in gravestones.

Figure 15 depicts a bottle (Fig. 15A), a glass (Fig. 15B) and an ashtray (Fig. 15C), on the surfaces of which there has, by the method according to the invention, been produced the name designed by the customer and a logo belonging to the name, and

Figure 16 depicts the treatment of the bottle surface piezoelectrically or by laser.

When the question is of a utility article, such as a bottle, it is always in a physically correct 3D form, i.e. the customer cannot affect the model and the customer selects from the assortment the basic bottle on which he desires to perform the processes.

The bottle may be made of glass or a ceramic material.

- 5 The customer creates a data file, i.e. design, within the freedoms and limitations set by the program.

In its simplest form, the customer creates a paper or plastic label, which is printed and fastened to the product selected by the customer.

- 10 If the work is done on the actual product, it can be carried out, for example, in the manner shown in Figure 2, piezoelectrically or by laser.

It is possible to use printing dyes or glass firing dyes, and then laser engravings or a protective lacquering of the surface can be carried out, the lacquer being then removed from the area in which the etching should affect.

- 15 The making of a genuine hologram on a bottle is also possible by means of laser, since the x, y and z coordinates of the product are precisely known. In this case the customer transmits the motif which he desires as a hologram on the product or selects from the chart the desired figure/figures, places them in their image form, transmits the data file, and an installation is created in the manufacturing company according to the instructions.

- 20 The acquiring of a nameplate or a sign takes place as follows:

1. The customer selects the metal

- 25 a) copper
b) brass
c) silver
d) other
e) etc.

2. The customer defines the size l x h of the plate or sign, selects from the predetermined thicknesses the one he desires, and defines the shape of the plate or sign.

3. The customer selects from the program the design he desires
 - a) text lower than the surface
 - b) text in embossed letters, also separate ones, for example, soldered
 - c) text cut through
 - 5 d) font
 - f) texture of the metallic plate or sign
 - g) decorative surfacing
 - h) possible frame
4. The customer selects the finish
 - 10 a) protective coating
 - b) metal coating (electrolytic)
 - c) colouring of the letters and the surface
 - d) etc.
5. The customer selects the fixing method and possible other mechanics
- 15 6. When the product is completed, the customer places an order

The above is a description of how the customer uses the program he has obtained *via* the Internet from the server of the selling/manufacturing company.

The customer need not necessarily know or take a stand regarding what actually takes place in the manufacturing process.

- 20 Below is a description of what takes place in terms of production when a customer creates the product he desires, a metal nameplate.

1. When the customer has ordered the product after carrying out steps 1-5, the following work process begins.
2. The program selects the correct production technology for the product:
 - 25 a) The correct metal, for example, brass 6 mm thick, is selected from stock.
 - b) The metal plate is cut to the size determined by the customer, for example, S1 B – 10, by laser or water jet cutting.
 - c) The customer may freely define the size l x h of the metal plate, but any other 3D geometry surface changes are predetermined in the data file.

d) The program has, ready-made, a desired number of options, methods of implementing the design, and a desired number of letter fonts.

f) The customer determines the font and the implementation method (design). Figure 18 shows laser machining 1, engraving or mechanical engraving 6.

5 In Figure 19, the area between the bossages 4 5 and 6 has been milled off.

In Figure 20, the metal plate 12 has been cut through, for example, in the area of the letters; in this case laser or water jet cutting technology has been used. In this case it is also possible to cut from another metal 13 a metal area (piece) which fits in an opening of the same size made in the plate 12.

10 In Figure 25, the metal plate 12 can also be coated with another metal 11, for example, silver or gold, etc. The entire metal plate 12 is coated by the said method.

Protective coating is used when it is desired that the metal surface will not, for example, become oxidized. In this case, ceramic coating, plasma coating or simply lacquer is used.

15 The protective coating, which is thus made last on the final product and, if ceramic coating (glazing/enamelling) is used, it can be implemented directly on the target or by means of a transfer film C2, in which case any of the work technologies B is used.

20 Figures 17, 18, 19, 20 and 25 can also be combined, and still it is possible to use, if the metal plate is not coated, as in Figure 25, also laser machining directly on the metal in order to product the desired pattern.

From Figures 22 and 23 it is also known that the metal plate 12 can be joined to a separate frame 8 a) by soldering, b) by welding, or c) mechanically. In this case the frame 8 may be of a metal different from that of the metal plate 12, or it may have
25 been treated by the same processes as the metal plate 12.

Since the frame 8 is in general always a cast product, it always has some dimensions (l x h) into which the metal plate 12 must fit, since the cast form already has a ready-made frame 8.

30 Another method of implementing the frame 8 is that the frame profile is made by the running metre and it is cut automatically into the desired dimensions when the dimensions (l x h) of the metal plate 12 are known.

Summary

The customer may thus design a plate or sign freely within the limitations and freedoms provided by the program, but need not necessarily even know what the work processes are.

5 Example

So-called "active light source plate" of Figure 26.

The light source 1, a fluorescent tube, halogen, discharge tube, or other, transmits the light to the actual plate 2, which is made of a material permeable to light, such as glass or plastic. The surface or area, for example 3, which should receive light, is
10 in general milled mechanically and possibly ground, in which case light is refracted at the said points, whereupon the area is lit. This step is in general carried out on the back surface of the plate, but may also be carried out on the front. It is also possible to join two plates or signs one against the other, in which case it looks the same from both directions.

15 The areas which have been milled are in general painted, in which case the lit area is emphasized brightly in the desired colour.

It is also known that the customer may combine some other known method. For example, a genuine hologram 4, in which case the manufacturing company selects a work process working either directly or indirectly on the work piece. Of course, the
20 customer may freely design the size (l x h) or select freely within the program what he will do.

The metal plate or plastic plate of Figure 27 depicts a method in which a flat base plate 1, to which an external part 2, a tape film, can be attached, or an area 4 and 3 can be removed from the plate 1 by some manufacturing process. It also indicates
25 that the customer may retain the original flat plate surface 1, since it is possible to remove first, for example, the area of a letter, to cut, for example, from another material or metal, the corresponding O-letter 2 and combine the parts by one of the novel work processes.

The metal plate of Figure 28, press moulded or cast, is an example of plates which
30 are used in doors or, for example, mailboxes, and which usually have the customer's name.

In the example case, the plate has been pressed from rolled metal or pressure moulded, in which case the customer cannot affect the 3D form as regards the plate itself, surfaces 2 and 3. But the customer may freely select and design within the program anything, as long as he uses one of the production technologies directly or indirectly.

Example, in a typical case Fig. 22, the plate has been pressed from 0.6 mm brass and then silver has been selected for the surface, areas 1 and 2. In this case the manufacturing company selects the novel electrolytic coating with silver.

Next, the customer designs, for example, his name, and desires it to be, for example, patinated brass. In this case the manufacturing company selects as the work technology laser machining, in which case silver is removed precisely from the areas desired by the customer.

Furthermore, when the customer, wants to have, for example, the picture of his dog on the plate, he scans the image of the dog and places it in the program in the desired spot in the desired size.

In this case the manufacturing company selects as the work technology transfer film D, creates precisely the image designed by the customer on the plate, and the plate is ready.

Figure 26 shows a hologram plate. When the question is of a genuine hologram, the state-of-the-art processes always presuppose a genuine piece which is during the process transferred as a hologram image onto an appropriate base.

Thus this always presupposes a physical installation from which a hologram image is created by known processes from genuine 3D pieces.

In this case the customer creates the image he desires with his program. When the data file is completed, he transmits it to the manufacturing company. The difference lies in that the customer selects from ready-made parts and creates an installation image material by using them. The manufacturing company may have in use all plants, from fauna all that can be borrowed from, for example, zoological museums, letters and numbers of different types, various wood materials, stones, etc.

The manufacturing company creates an installation on the basis of the data file created by the customer, carries out the process, and the customer receives the desired hologram plate.

In the examples presented above, the Internet has been used, but it is self-evident that even other prior known or future user interfaces can be used.

Claims

1. A method for acquiring ceramic, glass and stone products or nameplates and signs *via* the Internet, which products include, among others:
- a) ceramic floor tiles and surfacings,
 - 5 b) ceramic wall tiles and surfacings,
 - c) ceramic mouldings and decorative surfacings,
 - d) other ceramic interior parts and surfacings, such as ceramic sanitary products, their parts and utility articles,
 - e) glass wall and ceiling surfacings and doors,
 - 10 f) glass mirrors and mirror surfacings,
 - g) windows,
 - h) glass tables and table surfacings,
 - i) glass utility articles,
 - j) stone tabletops,
 - 15 k) stone tables and table surfacings,
 - l) stone floors and wall surfacings,
 - m) stone interior and decorative articles,
 - n) tombstones and stone memorials,
 - o) an empty or pre-filled bottle, drinking glass, ashtray or other similar utility or
 - 20 decorative article,
 - p) nameplates and signs,
- characterized in that the customer himself logs on to the Internet program of a company manufacturing ceramic, glass or stone products and designs the surface patterns, colours, sizes, etc., of the products and feeds the dimensions and quantities
- 25 of the products into the program by computer, whereafter the customer transmits the data concerning the products he has designed to the data file, i.e. order service, of the company manufacturing the products, the program of the company manufacturing the products selects the suitable manufacturing methods and work processes by means of which the dimensions, outer appearances and surface
- 30 patterns of the products can be produced, and the company stores or dispatches to the customer the completed products designed by the customer.
2. The method according to Claim 1, characterized in that the processes for coating the products include:

- a) chemical metal coating, such as silver coating,
- b) vacuum vaporization metal coating
- c) chemical metal coating combined with glazing or ceramic coating and firing,
- d) ceramic coating,
- 5 e) silver plating,
- f) painting,
- g) lacquering.

3. The method according to Claim 1 or 2, characterized in that the modification and coating of the products include the following work processes:

- 10 a) laser machining/engraving,
- b) hologram production technologies
- c) laser printing technologies
- d) colour/inkjet technologies
- e) silkscreen printing technologies
- 15 f) piezoelectric technologies
- g) offset and other known printing technologies
- h) mechanical milling/engraving and grinding
- i) laser or water jet cutting and
- j) 2-axle or 3-axle worktop process with striking tools for stone products
- 20 k) compressed-air/sand blasting technology.

4. The method according to any of the preceding claims, characterized in that the designing of the products and their manufacturing process are carried out in a completely digital form.

5. The process according to any of the preceding claims, characterized in that
25 the customer first selects the basic material for the product, such as light blue ceramic tile, a panel door for cabinets, or red granite stone for a monument, whereafter the surface pattern and colour tones are designed in further refining processes.

6. The method according to Claim 1, characterized in that the customer selects a
30 separate frame, which he may also select and design separately from the actual plate or sign.

1/9

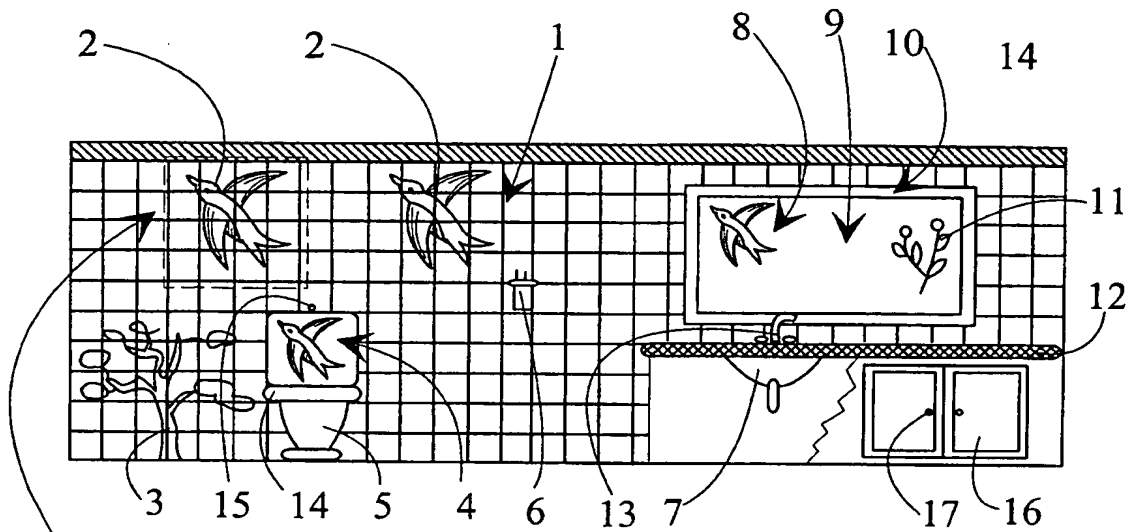


Fig. 1

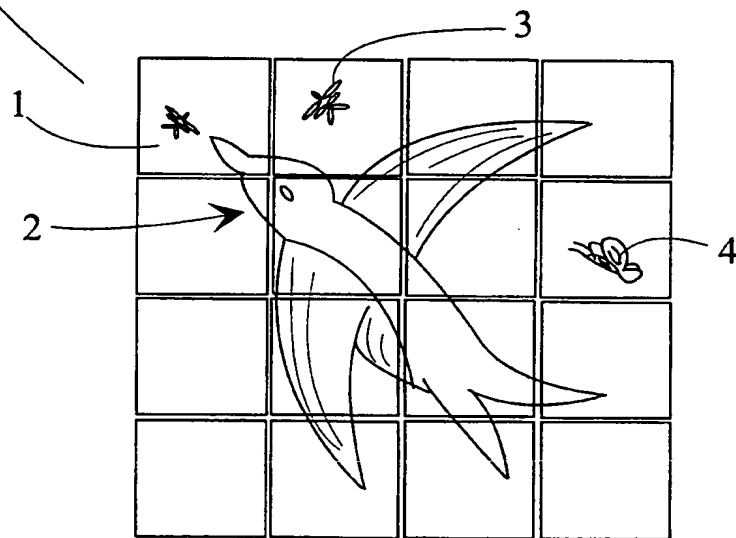


Fig. 2

3/9

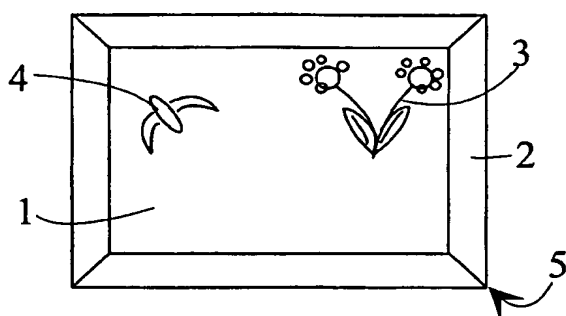


Fig. 6

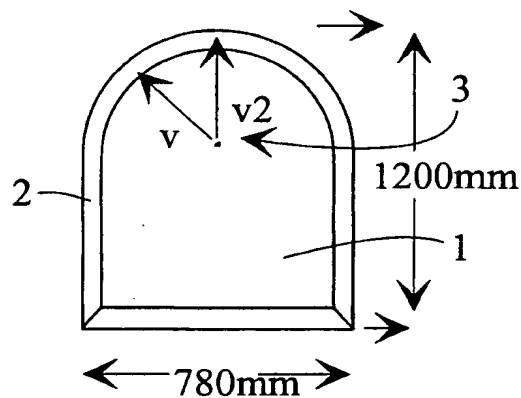


Fig. 7

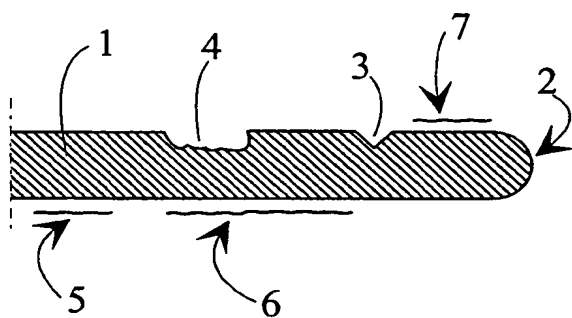


Fig. 8

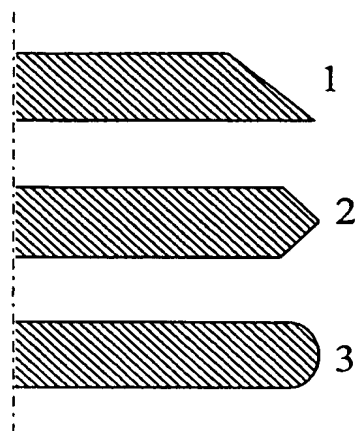


Fig. 9

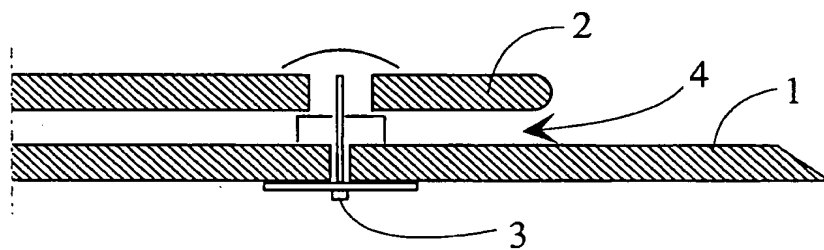


Fig. 10

4/9

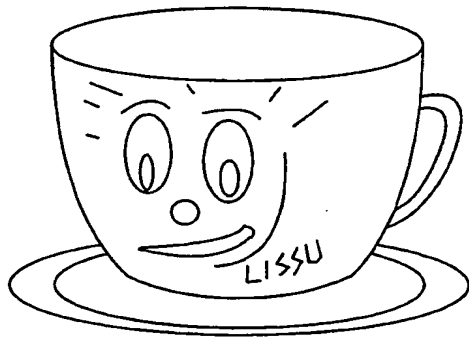


Fig. 11

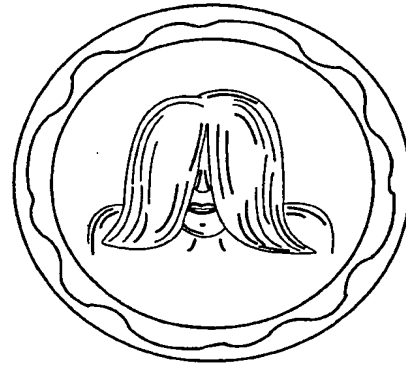


Fig. 12

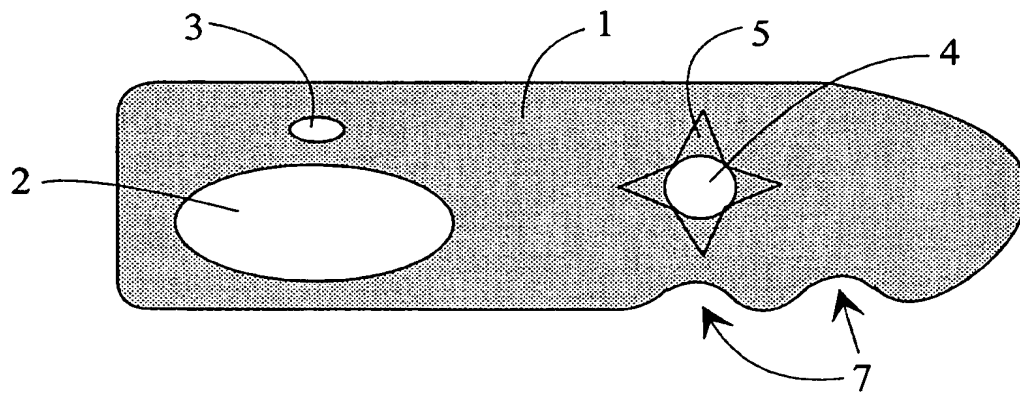


Fig. 13

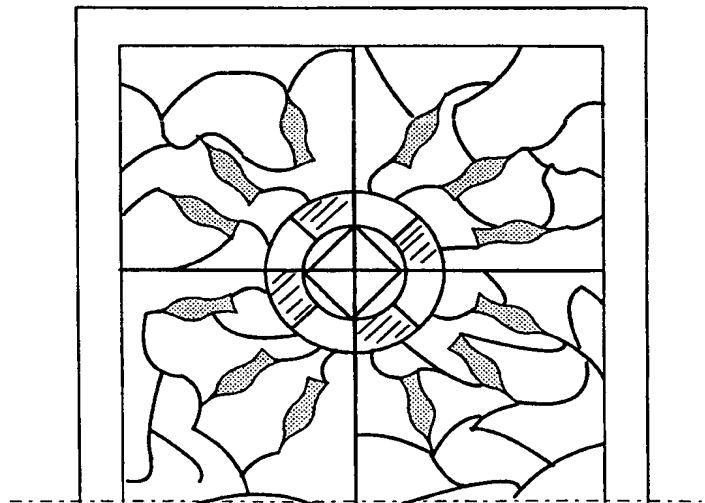


Fig. 14

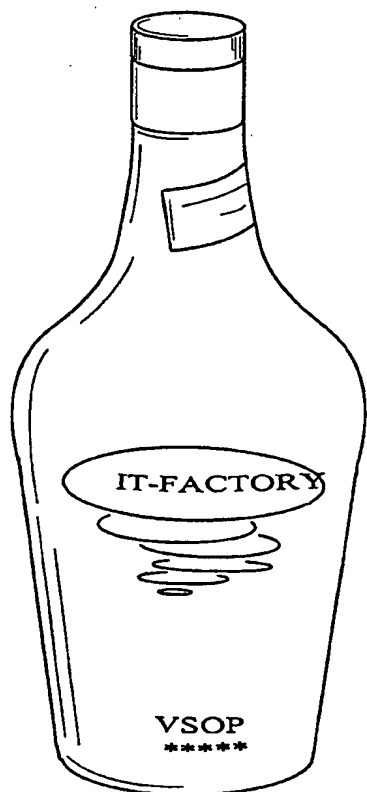


Fig. 15A

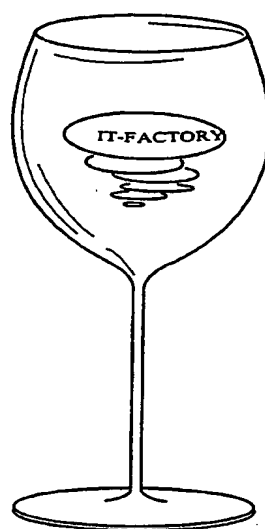


Fig. 15B

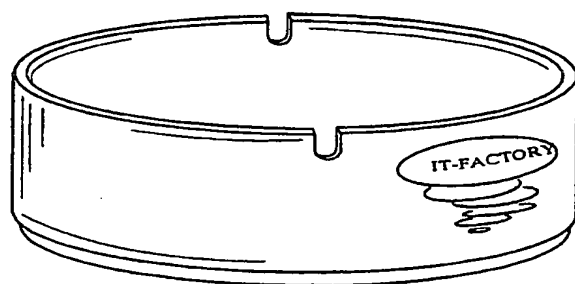


Fig. 15C

Fig. 15

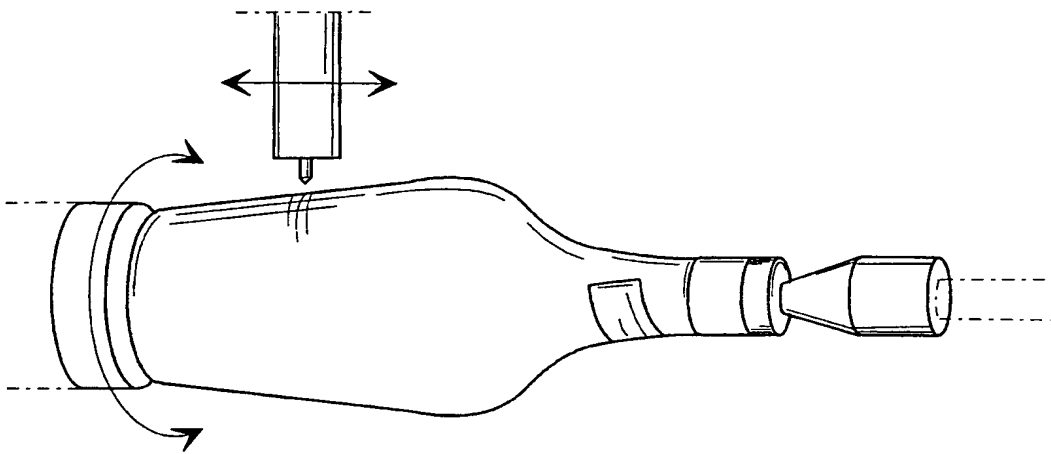


Fig. 16

7/9

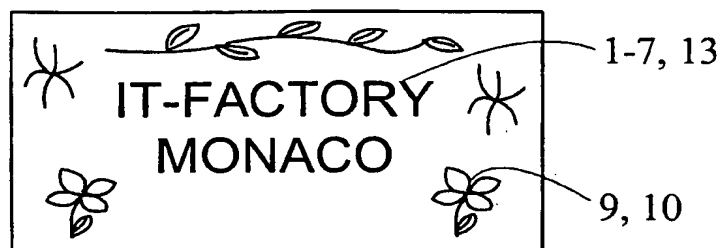


Fig. 17

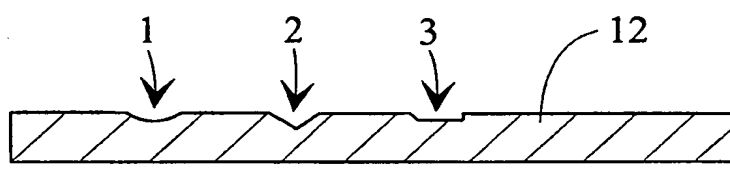


Fig. 18

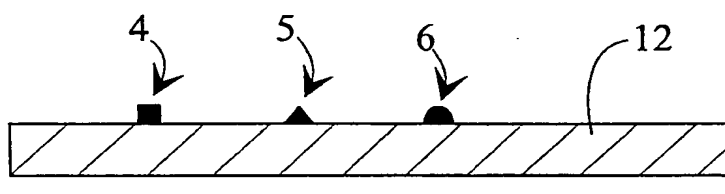


Fig. 19

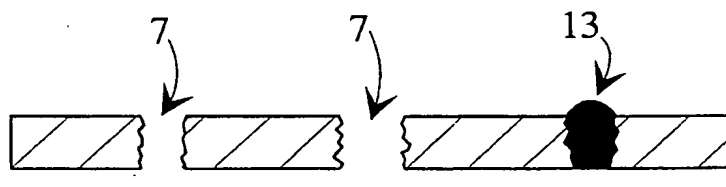


Fig. 20

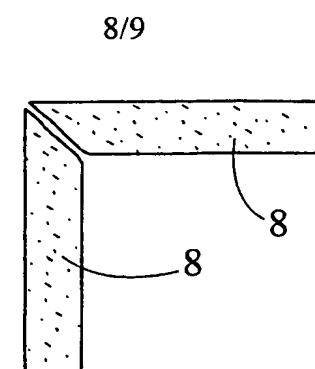


Fig. 21

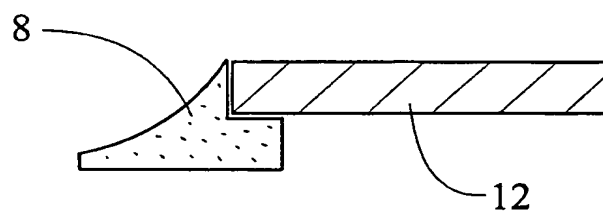


Fig. 22

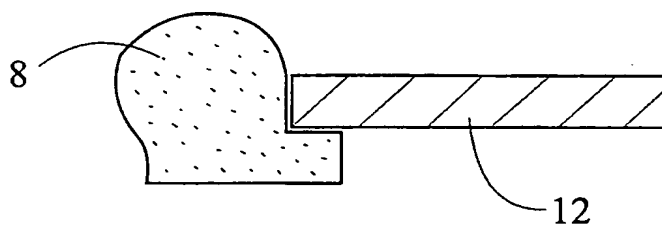


Fig. 23

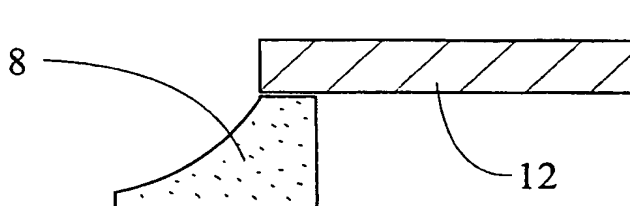


Fig. 24

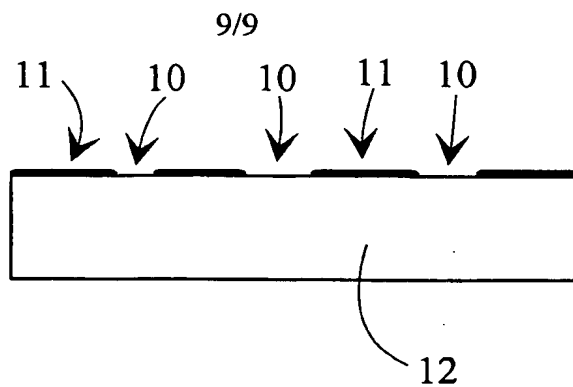


Fig. 25

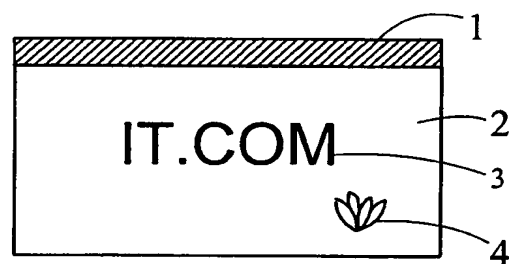


Fig. 26

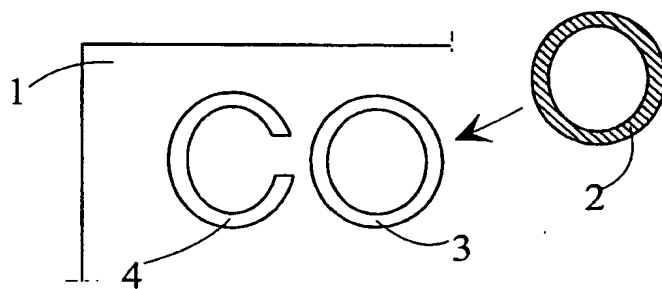


Fig. 27

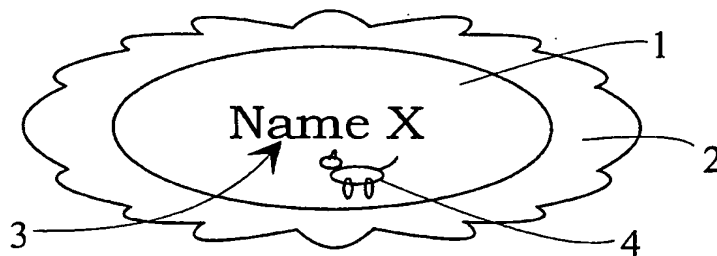


Fig. 28

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 00/00838

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06F 17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9852144 A1 (METROLOGIC INSTRUMENTS, INC.), 19 November 1998 (19.11.98), the whole document --	1-6
A	US 5570292 A (ABRAHAM ET AL), 29 October 1996 (29.10.96), the whole document --	1-6
A	EP 0801355 A2 (BAKER HUGHES INCORPORATED), 15 October 1997 (15.10.97), the whole document --	1-6
A	WO 9815908 A1 (CITIZEN WATCH CO., LTD.), 16 April 1998 (16.04.98), the whole document -- -----	1-6



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

8 January 2001

Date of mailing of the international search report

15 -01- 2001

Name and mailing address of the ISA/

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Jesper Bergstrand /OGU

Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI00/00838

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: **1-6**
because they relate to subject matter not required to be searched by this Authority, namely:
 ... / ...
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI00/00838

A method of doing business.

According to Rule 39 no search is required since the subject matter of the claimed invention concerns a method of doing business.

Despite this fact a search has been performed and thus a search report has been established.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/FI 00/00838

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9852144	A1	19/11/98	AU	7570098 A	08/12/98
				CN	1255217 T	31/05/00
				EP	0983570 A	08/03/00
				GB	2341251 A	08/03/00
				GB	9926738 D	00/00/00
				US	6085978 A	11/07/00

US	5570292	A	29/10/96	CA	2142484 A	15/08/95

EP	0801355	A2	15/10/97	JP	10063712 A	06/03/98

WO	9815908	A1	16/04/98	CN	1237255 A	01/12/99
				EP	1020807 A	19/07/00
